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### (54) Garbage storage device

(57) A garbage storage device (2) includes a base (4), a bin (6) installed on the base, a pedal (8) mounted on the bin, a lid (10) mounted on the bin, a linkage (12)

arranged between the pedal and the lid and a buffer (18) arranged between the base and the linkage. The buffer includes a spring (34) connected between the base and the linkage.

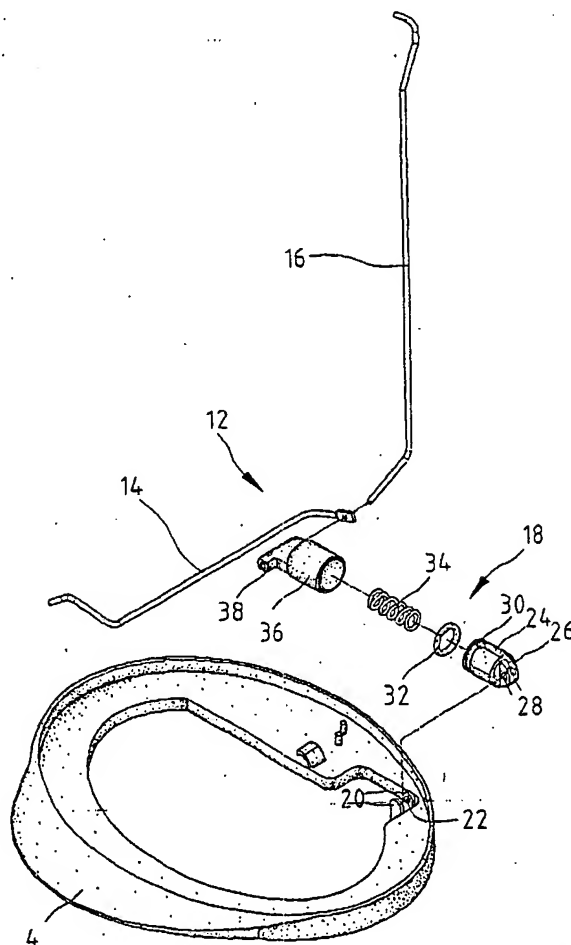


Fig. 2

## Description

### Background of Invention

#### Field of Invention

[0001] The present invention relates to a garbage storage device including a lid and a buffer for the lid.

#### Related Prior Art

[0002] People dispose of garbage in garbage bins. Some of the garbage stinks some time after the disposal. Therefore, some of the garbage bins are equipped with lids in order to keep the odor of such garbage therein. In some other cases, people use garbage bins equipped with lids simply to conceal garbage contained therein.

[0003] Some lids can be removed from garbage bins. However, such a lid causes a user trouble for he or she has to hold the lid during disposal of garbage or find a place to lay the lid on before disposal of garbage.

[0004] A conventional garbage storage device includes a base, a bin installed on the base, a pedal pivotally mounted on the bin and a lid pivotally mounted on the bin. A linkage is arranged between the pedal and the lid. The linkage includes a first lever and a second lever. The first lever is pivotally mounted on the base. The first lever includes a first end in contact with the pedal and a second end. The second lever includes a first end connected with the second end of the first lever and a second end connected with the lid. In specific, the second end of the first lever defines an aperture for receiving the first end of the second lever. Thus, the pedal can be trodden in order to lift the lid through the linkage. However, closing the bin with the lid often makes a loud noise.

[0005] The present invention is therefore intended to obviate or at least alleviate the problems encountered in prior art.

### Summary of Invention

[0006] It is the primary objective of the present invention to provide a garbage storage device that makes little noise when moved from an open position to a closed position.

[0007] According to the present invention, a garbage storage device includes a base, a bin installed on the base, a pedal pivotally mounted on the bin, a lid pivotally mounted on the bin, a linkage arranged between the pedal and the lid and a buffer arranged between the base and the linkage.

[0008] The buffer may include a spring connected between the base and the linkage. The buffer may further include a first cylinder including a closed end connected with the base and an open end through which the spring is inserted and a second cylinder including an open end

through which the spring is inserted and a closed end connected with the linkage.

[0009] One of the first and second cylinders may be partially inserted in the other one of the first and second cylinders. The first cylinder may be partially inserted in the second cylinder. The buffer may include a ring mounted on the first cylinder. The buffer may include a groove defined around one of the first cylinder for receiving the ring.

[0010] The base may include two ears formed thereon. The first cylinder may include an ear formed at the closed end and mounted on the ears of the base. Each of the ears of the base may include a boss formed thereon facing that of the other one of the ears of the base, and the ear of the first cylinder defines two recesses for receiving the bosses of the ears of the base.

[0011] The second cylinder may include a tube transversely extending from the closed end for receiving the first end of the second lever.

[0012] Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the attached drawings.

### Brief Description of Drawings

[0013] The present invention will be described through detailed illustration of embodiments referring to the attached drawings wherein:

Figure 1 is a perspective view of a garbage storage including a bin and a lid;

Figure 2 is an exploded view of a buffer according to the present invention for the lid of the garbage storage device shown in Figure 1;

Figure 3 is a cross-sectional view of the garbage storage device shown in Figure 1 equipped with the buffer shown in Figure 2;

Figure 4 is a cross-sectional view taken along a line 4-4 in Figure 3;

Figure 5 is identical to Figure 3 except for showing the garbage storage device in a fully open position;

Figure 6 is a cross-sectional view taken along a line 6-6 in Figure 5;

Figure 7 is identical to Figure 6 except for showing the garbage storage device in a different position; and

Figure 8 is an enlarged cross-sectional view of the buffer shown in Figure 7.

### **Detailed Description of Preferred Embodiment**

[0014] Referring to Figure 1, a garbage storage device 2 includes a base 4, a bin 6 installed on the base 4, a pedal 8 pivotally mounted on the bin 6 and a lid 10 pivotally mounted on the bin 6.

[0015] Figure 2 shows a linkage 12 arranged between the pedal 8 and the lid 10 of the garbage storage device shown in Figure 1. The linkage 12 includes a first lever 14 and a second lever 16. The first lever 14 is pivotally mounted on the base 4. The first lever 14 includes a first end in contact with the pedal 8 and a second end. The second lever 16 includes a first end connected with the second end of the first lever 14 and a second end connected with the lid 10. In specific, the second end of the first lever 14 defines an aperture for receiving the first end of the second lever 16. Thus, the pedal 8 can be trodden in order to lift the lid 10 through the linkage 12.

[0016] Figure 2 further shows a buffer 18 according to the preferred embodiment of the present invention for use in the garbage storage device 2 shown in Figure 1. The buffer 18 is arranged between the base 4 and the linkage 12.

[0017] For pivotal connection with the buffer 18, the base 4 includes two ears 20 each formed with a boss 22 facing that of the other ear 20.

[0018] The buffer 18 includes a first cylinder 24 including a closed end and an open end. The first cylinder 24 is formed with an ear 26 at the closed end. The ear 26 defines two recesses 28 on both sides. The ear 26 is inserted between the ears 20 so that the bosses 22 are received in the recesses 28. Thus, the first cylinder 24 is pivotally mounted on the ears 20. A groove 30 is defined around the first cylinder 24 near the open end. A ring 32 is received in the groove 30.

[0019] The buffer 18 further includes a spring 34 received in the first cylinder 24.

[0020] The buffer 18 further includes a second cylinder 36 with an open end and a closed end. The second cylinder 36 includes a tube 38 transversely extending from the closed end. The second cylinder 36 is mounted on the first cylinder 24. The first end of the second lever 16 is inserted in the tube 38. Thus, the second cylinder 36 is pivotally connected with the second lever 16.

[0021] Figures 3 and 4 show the garbage storage device 2 in a closed position where the buffer 18 shrinks. The spring 34 is compressed.

[0022] Referring to Figures 5 and 6, the lid 10 is pivotally moved until the garbage storage device 2 reaches a fully open position. The buffer 18 fully extends and the spring 34 is not compressed.

[0023] Referring to Figure 7, the lid 10 is released. The lid 10 falls due to its weight. The movement of the lid 10 is buffered or hindered via the buffer 18 since they are both connected with the linkage 12.

[0024] Referring to Figure 8, damping oil can be used in a gap defined between the first cylinder 24 and the second cylinder 36 in order to enhance the buffering of

the movement on the falling lid 10.

[0025] The present invention has been described through detailed illustration of the preferred embodiment. Those skilled in the art can derive many variations from the preferred embodiment without departing from the scope of the present invention. Therefore, the preferred embodiment shall not limit the scope of the present invention. The scope of the present invention is defined in the attached claims.

### **Claims**

1. A garbage storage device 2 including a base (4), a bin (6) installed on the base (4), a pedal (8) mounted on the bin (6), a lid (10) mounted on the bin (6), a linkage (12) arranged between the pedal (8) and the lid (10) and a buffer (18) arranged between the base (4) and the linkage (12).
2. The garbage storage device according to claim 1 wherein the buffer (18) includes a spring (34) connected between the base (4) and the linkage (12).
3. The garbage storage device according to claim 2 wherein the buffer (18) includes a first cylinder (24) including a closed end connected with the base (4) and an open end through which the spring (34) is inserted and a second cylinder (36) including an open end through which the spring (34) is inserted and a closed end connected with the linkage (12).
4. The garbage storage device according to claim 3 wherein one of the first and second cylinders (24; 36) is partially inserted in the other one of the first and second cylinders (24; 36).
5. The garbage storage device according to claim 4 wherein the first cylinder (24) is partially inserted in the second cylinder (36).
6. The garbage storage device according to claim 5 wherein the buffer (18) includes a ring (32) mounted on the first cylinder (24).
7. The garbage storage device according to claim 6 wherein the buffer (18) includes a groove (30) around the first cylinder (24) for receiving the ring (32).
8. The garbage storage device according to claim 3 wherein the base (4) includes two ears (20) formed thereon, and the first cylinder (24) includes an ear (26) formed at the closed end and mounted on the ears (20) of the base (4).
9. The garbage storage device according to claim 8 wherein each of the ears (20) of the base (4) in-

cludes a boss (22) formed thereon facing that of the other one of the ears (20) of the base (4), and the ear (26) of the first cylinder (24) defines two recesses (28) for receiving the bosses (22) of the ears (20) of the base (4).

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10. The garbage storage device according to claim 3 wherein the second cylinder (36) includes a tube (38) transversely extending from the closed end for receiving the first end of the second lever (16).

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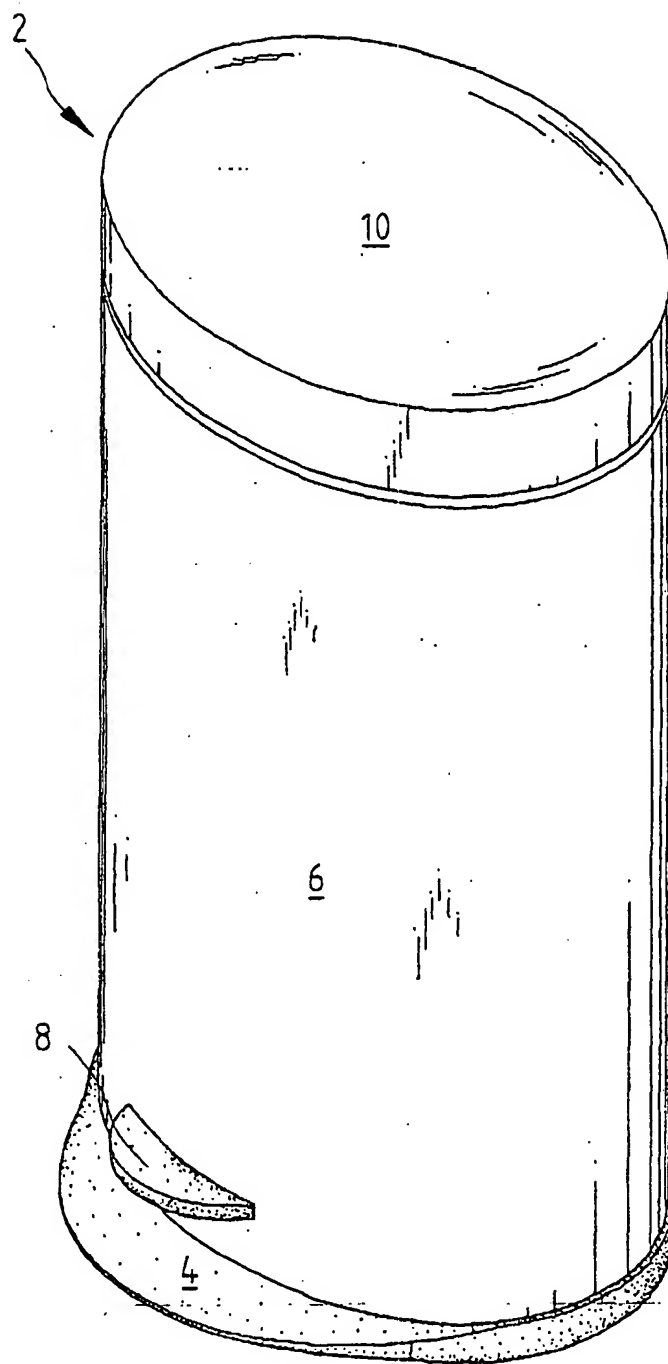


Fig. 1

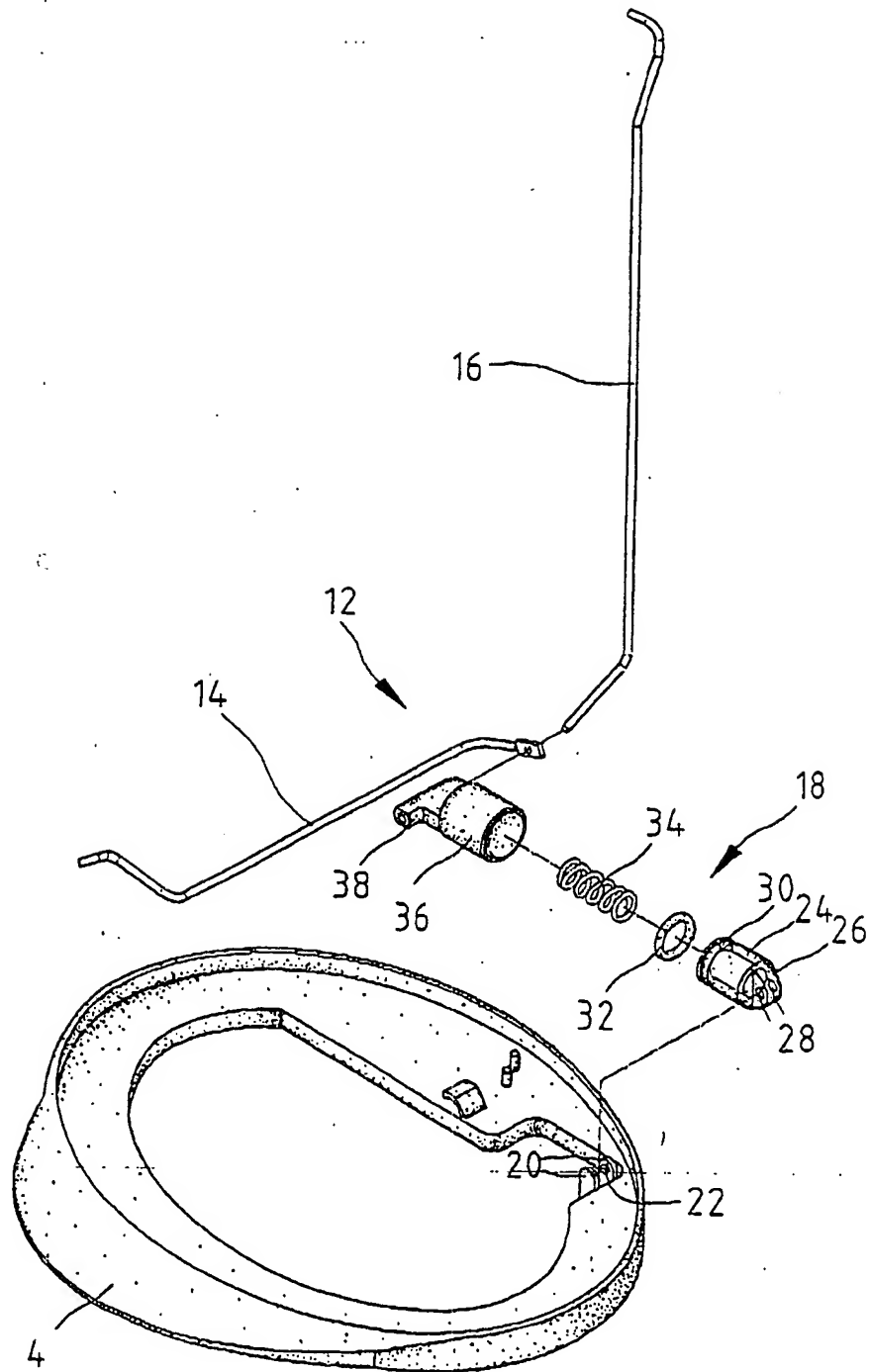


Fig. 2

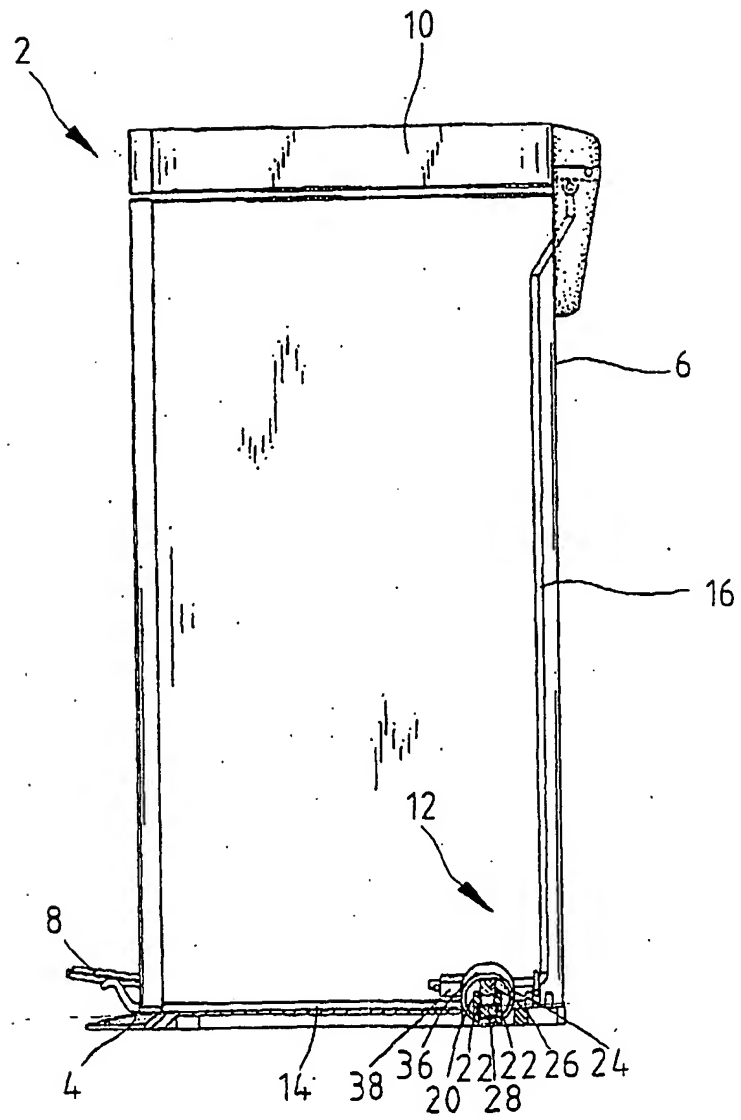


Fig. 3

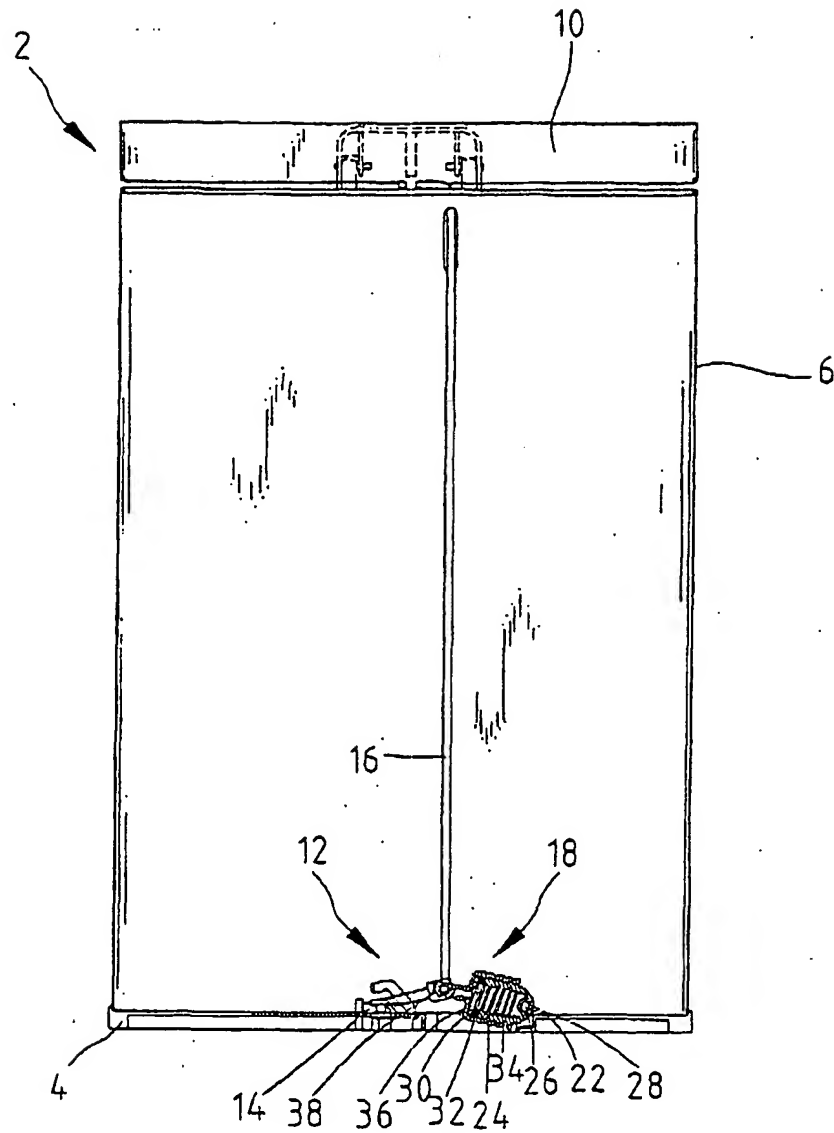


Fig. 4

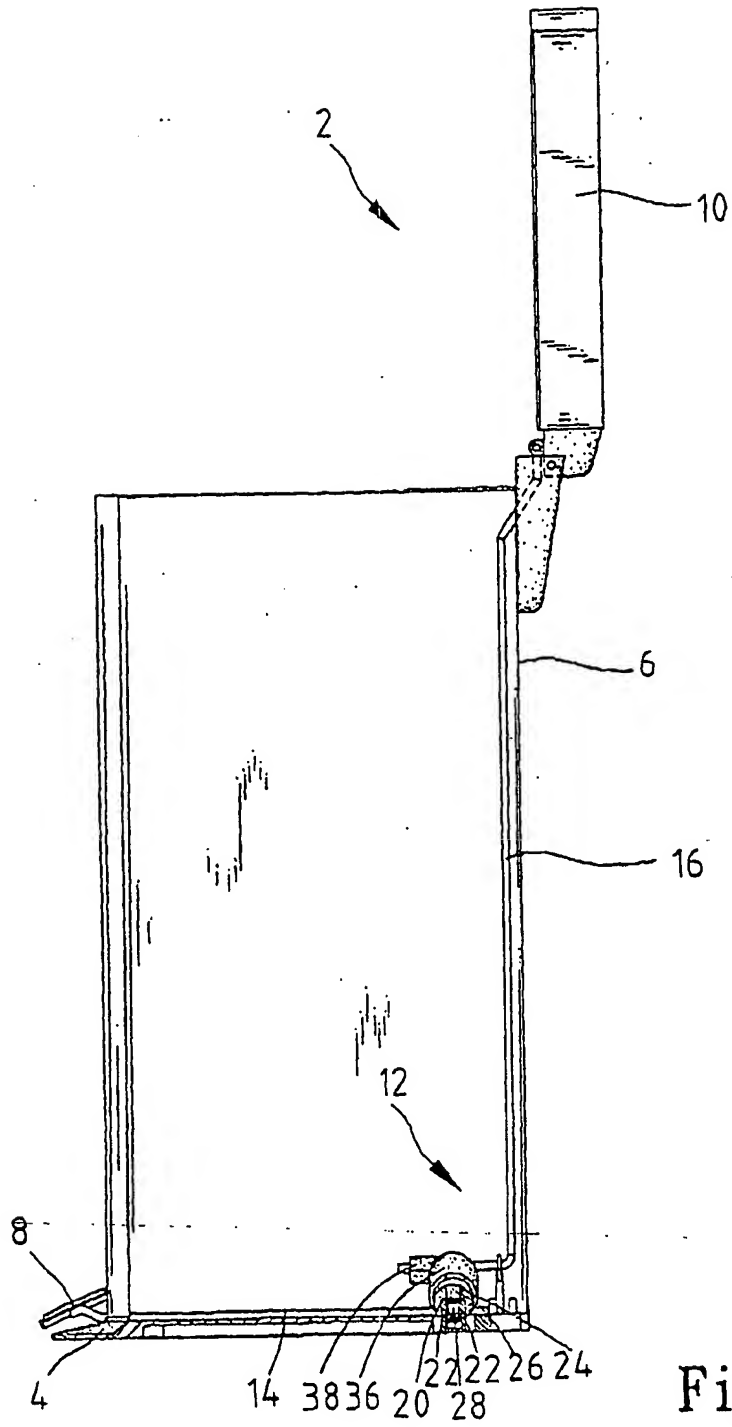


Fig. 5

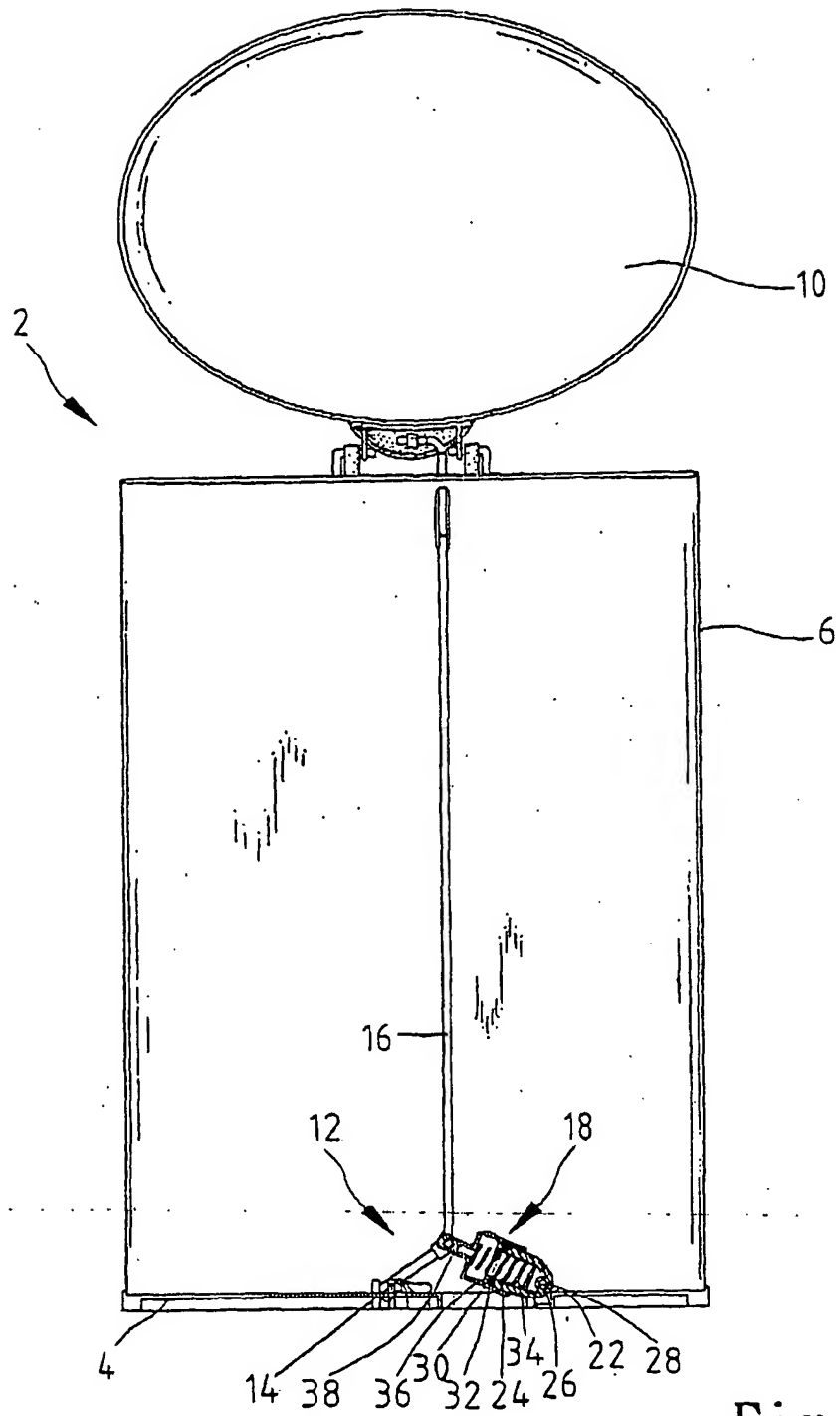


Fig. 6

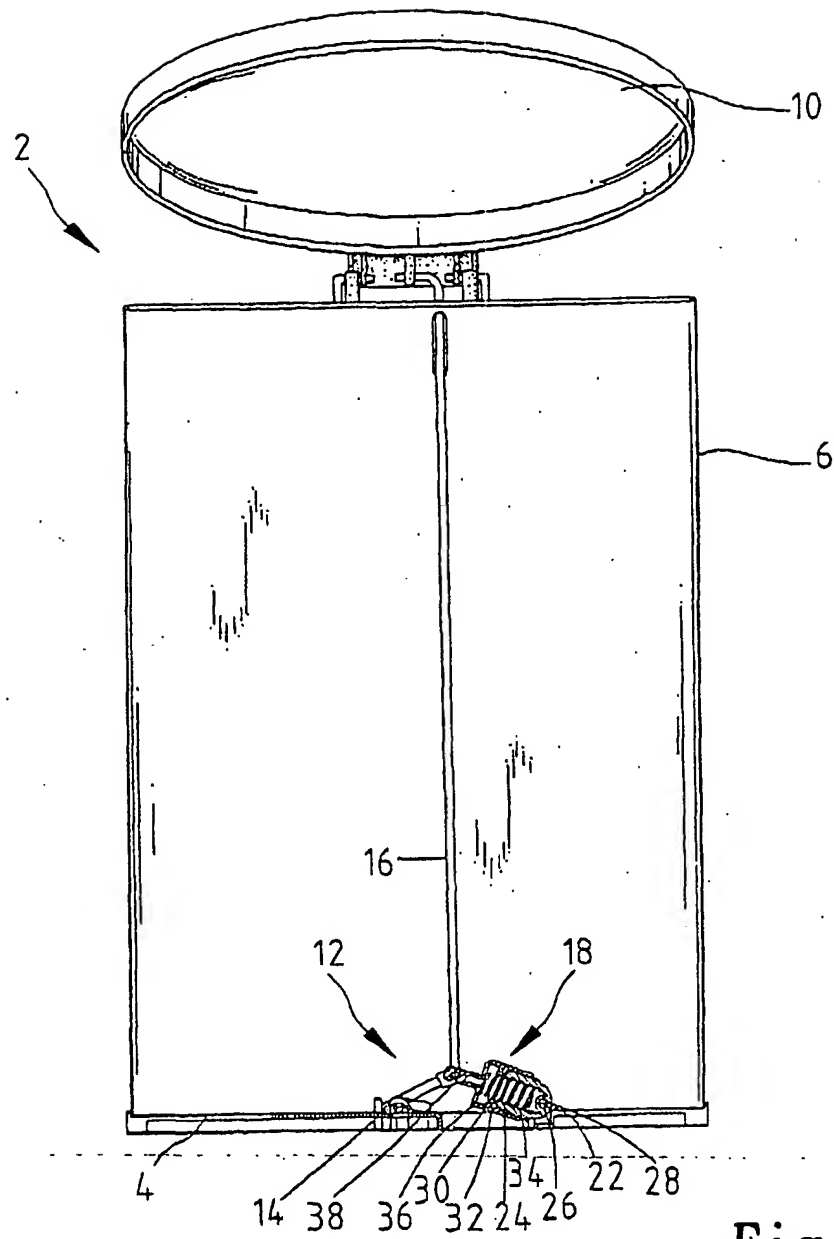


Fig. 7

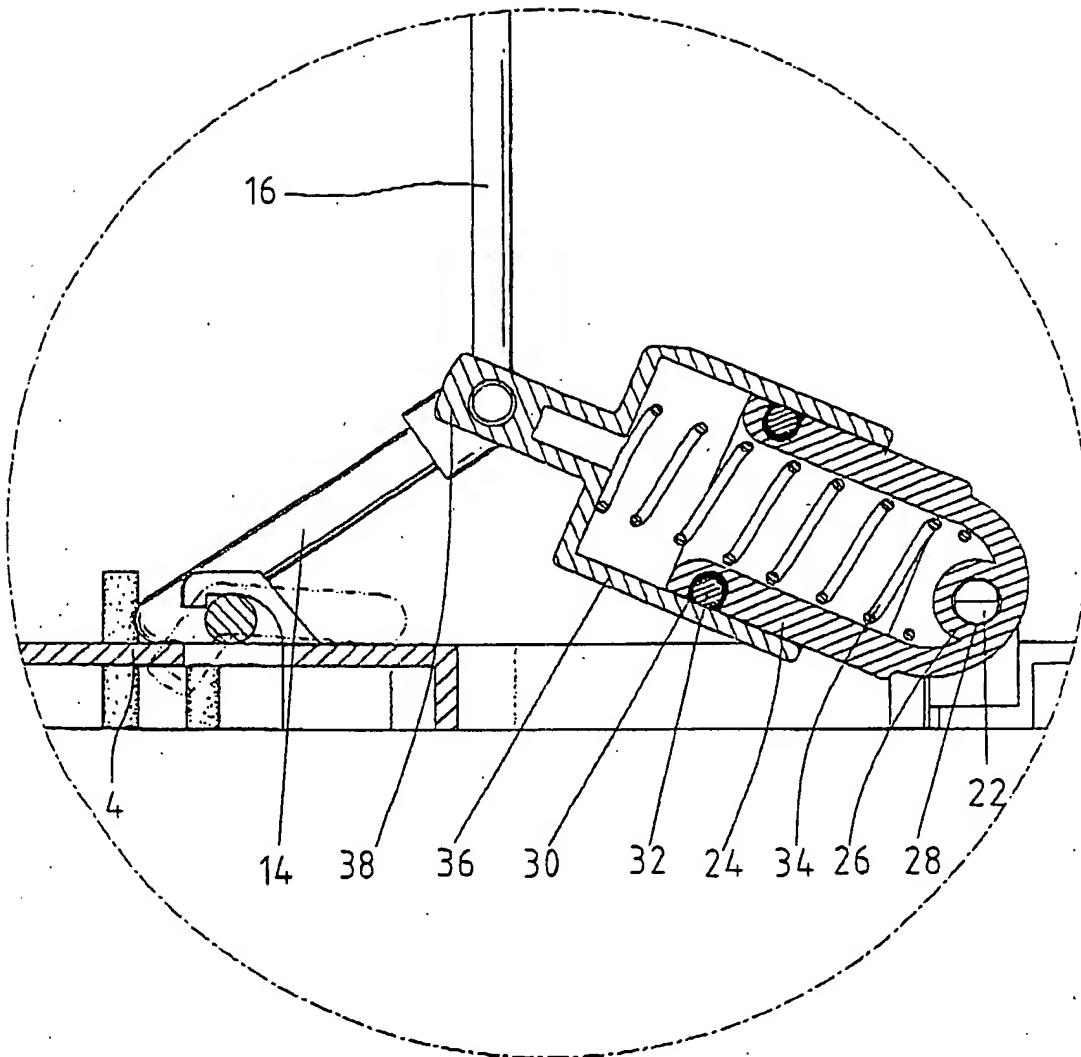


Fig. 8



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# EUROPEAN SEARCH REPORT

Application Number  
EP 02 01 6770

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 094 017 A (HAILO-WERKE RUDOLF LOH GMBH & CO. KG) 25 April 2001 (2001-04-25) * column 4, line 10 - column 5, line 21 * * column 6, line 43 - column 7, line 11 * * figures 1-3,5 *	1,2	B65F1/16
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A	DE 200 01 431 U (T. WANG) 11 May 2000 (2000-05-11) * page 2, line 23 - page 4, line 8 * * figures 1-5 *	1-5,10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		7 January 2003	Smolders, R
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 02 01 6770

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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